
GLOSSARY

air basin

A defined area in which air-borne pollutants tend to circulate and mix.

alternating current (AC)

An electric current or voltage that reverses direction of flow periodically, as contrasted to direct current, and has alternately positive and negative values. Most electricity used in the U.S. today is alternating current.

ambient air quality

The normal or average prevailing quality of the surrounding air in a given area in terms of the type and amounts of various air pollutants present.

ambient noise level

The normal or average background noise level (usually recorded in decibels) within a given area for a certain period of time during the day.

area of potential effect

For cultural resources, the extent of land that could be altered by the proposed action or an alternative.

attainment area

A geographic region where the concentration of a criteria air pollutant does not exceed national ambient air quality standards.

authorization

The legislation enacted by Congress, which sets up or continues the legal operation of a Federal program or agency indefinitely or for a specific period, or permits a particular type of obligation or expenditure within a program.

cable

A conductor with insulation (single conductor cable) or a combination of conductors insulated from one another (multi-conductor cable). Cables up to 115 kV usually have solid-type insulation; cables rated 230 kV and above are oil-filled.

capacitor

Capacitor is an element used in electric power systems that is described through its principal function, which is to store electric energy. This property is called capacitance. In its simplest form, a capacitor is built with two conducting plates separated by a dielectric.

capacity

The maximum load that a generator, piece of equipment, substation, transmission line, or system can carry under existing service conditions. Sometimes used interchangeably with capability, although not a synonym.

carbon monoxide (CO)

A colorless, odorless gas which is the product of incomplete combustion when natural gas, oil, wood, coal, or other materials rich in carbon are burned. Carbon monoxide interferes with the delivery of oxygen throughout the body.

cascading

1) In a power system, the tendency of a local line fault to trigger problems elsewhere on the system and lead to a widespread power outage. 2) In a transmission line, a succession of mechanical failures along the line caused by one event such as a broken insulator.

Central Valley Project (CVP)

The multipurpose Federal reclamation project authorized by Congress under the *Central Valley Project Act*, as amended (50 Stat. 844, 850). The CVP generally runs from the Cascade Mountain Range in northern California to the plains along the Kern River, south of the City of Bakersfield.

circuit

A system of conductors through which an electric current is intended to flow; sometimes normally open paths that do not ordinarily conduct in a network can also be considered part of a circuit.

double-circuit

To place two separate electrical circuits (for alternating current, each circuit consists of three separate conductors or bundles of conductors) on the same transmission structures.

single-circuit

To place one electrical circuit that consists of three separate conductors or bundles of conductors on one tower.

Clean Air Act (CAA)

1) A 1963 Federal law, amended several times since, giving the Federal government powers to limit air pollution. 2) A term loosely applied to the *Air Quality Act* of 1967, which gave the Federal government a stronger regulatory role. An especially important effect was the development of standards based on concentrations of pollutants in air.

Clean Water Act (CWA)

A Federal law intended to restore and maintain the chemical, physical, and biological integrity of the nation's waters and secure water quality that provides for the protection and propagation of fish, shellfish, and wildlife, as well as for recreation in and on the water.

conductor

- 1) Any metallic material, usually in the form of wire, cable, or bar, suitable for carrying an electric current.
- 2) The wire cable strung between transmission towers.

conservation

Synonymous with energy conservation, the reduction of electric energy consumption because of increases in the efficiency of production, distribution, and end use.

consultation

Includes, but is not limited to: prior to taking any action with potential impact upon American Indian nations, providing for mutually agreed protocols for timely communication, coordination, cooperation, and collaboration to determine the impact on traditional and cultural lifeways, natural resources, treaty and other Federally reserved rights involving appropriate tribal officials and representatives throughout the decision-making process, including final decision-making and action implementation as allowed by law, consistent with a government-to-government relationship.

contaminant

Any substance or matter that has an adverse effect on air, water, or soil. Also see pollutant.

corona

A luminous electrical discharge due to the ionization of the air surrounding a conductor caused by a voltage gradient exceeding a certain critical value. Can be seen as bluish tufts or streamers surrounding the conductor or conductor hardware, and generally a hissing sound can be heard. Transmission-line corona varies with atmospheric conditions and is more intense during wet weather.

corridor

A strip of land, one-half mile wide or more, forming a passageway for transportation or utility facilities. Also see right-of-way.

cultural resources

Include but are not limited to: archaeological materials (artifacts) and sites dating to prehistoric, historic, and ethno historic periods that are located on the ground surface or are buried beneath it; natural resources, sacred objects, and sacred sites that have importance for American Indian peoples; resources that the American Indian nations regard as supportive to their cultural and traditional lifeways.

current

1) In common usage, the flow of electric energy when an appliance or machine is turned on. 2) In technical sense, a term usually modified by an adjective, such as direct current, referring to the rate of electrical charge flowing through a conductor or circuit as compared to voltage (volts), which is the force or pressure that causes the current to flow; current and ampere are often used interchangeably.

decibel (dB)

1) A unit used to describe the strength or intensity of wave-propagated phenomena such as sound or transmitted signals. Technically, a logarithmic scale is used. 2) One dB equals the least sound level detectable by the human ear, while 70 dB is equivalent to busy traffic and 150 dB is equal to a nearby jet taking off.

deformed

Any change in the original form or volume of rock masses produced by tectonic forces; folding, faulting, and solid flow are common modes of deformation. As an example, folding implies that a structure that originally was planar, like a sedimentary bed, has been bent. Horizontal or vertical forces in the earth's crust may produce the deformation. Another type of deformation can result when large rock masses glide down an inclined bedding plane, fault plane, or unconformity under the force of gravity.

demand

1) In a consumer context, the amount of electricity used. 2) In a public utility context, the rate at which electric energy is delivered to or by a system over any designated period. Expressed in kW or MW, or in kVA or MVA. 3) The amount of electric energy, in kilowatts or megawatts, needed at any given time to meet a customer's or total system load.

demand-side management

Reducing the load in a critical area of the electrical distribution system. Traditionally, this effort has included energy conservation measures and pre-arranged means to reduce specific customer load during times of high demand. Air-conditioning cycling programs are an example of a pre-arranged demand-side management tool. See load shedding.

dispatcher

1) Individual at a control center who monitors and controls a power system. 2) At Western, dispatcher responsibilities include: operating the automatic generation control equipment to regulate the loading of the generators in the Federal power plants to help maintain scheduled system frequency and the scheduled power interchange with other utilities; issuing electrical clearances on the Western system for safe maintenance and repair of equipment; isolating system trouble and dispatching of maintenance forces to repair facilities and restore service; maintaining transmission voltage schedules.

disposal

Final placement or destruction of hazardous materials—toxic, radioactive, or other wastes; pesticides or other chemicals; and polluted soils at Federally approved sites.

distribution

The transport of electricity to ultimate use points, such as homes and businesses, from a source of generation or from one or more substations.

disturbance

Any occurrence that adversely affects normal power flow in a system, including a fault or loss of an interconnection carrying a large block of power.

double circuit

See circuit.

easement

The right, privilege, or interest obtained by Western through negotiated contract or condemnation to construct, maintain, and operate transmission facilities within a right-of-way.

electric and magnetic fields (EMF)

Fields of force caused by electric voltage and current around the electric wire or conductor when an electric transmission line or any electrical wiring is in operation. Magnetic fields exist only when current is flowing. Electric fields are present in electrical appliances and cords whenever they are plugged in.

electricity

1) The common term used for electric power and for electric energy (power designates the total electricity delivered and energy designates what is delivered over time). 2) A flow of electrons along a conductor from an area of high electric potential to an area of low potential and/or a waveform component of the electromagnetic spectrum.

electromagnetic

Of or pertaining to the magnetic forces produced in a surrounding medium by the flow of current in a conductor, as used in this document, meaning electric and magnetic fields.

endangered species

Under the Endangered Species Act animals, birds, fish, plants, or other living organisms whose existence is determined to be in danger throughout all or a significant portion of its range because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors.

environmental assessment (EA)

A document that evaluates the possible environmental effects of a Federal agency's proposed action and provides sufficient evidence to determine whether an EIS or a FONSI is warranted. An EA is one means of compliance with NEPA.

environmental impact statement (EIS)

A document that examines the possible environmental effects of a Federal agency's proposed actions. A tool for decision-making, it describes the positive and negative effects of proposed actions and lists alternative actions.

erosion

1) The wearing away of land surface by wind or water that occurs naturally from weather or runoff but can be intensified by land-clearing practices related to such activities as farming, residential or industrial development, road building, or timber-cutting. 2) A material wear mechanism resulting from suspended particles in a flow stream of water or other fluid.

floodplain

The lowlands adjoining inland and coastal waters. A relatively flat and flood-prone area.

forbs

A broad-leaved herb other than a grass, especially one growing in a field, prairie, or meadow.

gauss (G)

A unit used to measure magnetic field strength. The intensity of the earth's magnetic field, near the surface of the earth, is on the order of one-half gauss.

generation

1) The act or process of producing electricity from other forms of energy, such as hydro, coal-fired steam turbines, or photovoltaic conversion systems. 2) The amount of electrical energy produced.

generator

1) In a power plant, the machine that converts mechanical energy to electrical energy. 2) A utility that owns or acquires the output of a generating resource.

grid

See transmission grid.

ground

A connection from electrical equipment to a ground mat or to the earth, used to ensure that the equipment (housing or structure) would be at the same potential (voltage) as the earth.

ground wire

A protective wire strung above the conductors on a transmission line to shield the conductors from lightning; also called shield wire or overhead ground wire. Also see shield wire.

habitat

The place where a population (human, animal, plant, or microorganism) lives and its surroundings, both living and nonliving.

hazardous waste

The byproducts of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of the following characteristics: ignitability, corrosivity, reactivity, or toxicity. See also RCRA.

high voltage

Descriptive of transmission lines and electrical equipment with voltage levels from 100 kV through 287 kV.

impact

Direct or indirect changes in the existing environment, whether beneficial or adverse, resulting from a specific act or series of acts.

insulator

A device, made of nonconducting material, used to give support to electrical conductors and shield them from ground or other conductors. An insulator inhibits the flow of current from the conductor to the earth or another conductor.

kilovolt (kV)

One kilovolt equals 1,000 volts.

lacustrine

Living or growing in or along the edges of lakes

lattice

Descriptive of structures and substation structures designed with skew as well as horizontal and vertical members.

load

The amount of electric energy delivered or required at any specified point or points on a system. Load originates primarily at the energy-using equipment of consumers, such as heaters, air conditioners, lights, and motors.

load shedding

Cutting off the electric current on certain lines when the demand becomes greater than the supply.

magnetic field

The invisible lines of magnetic force produced by electric current flowing in a conductor, such as a transmission line, service wires in a house, or household appliances. Measured in terms of lines of force per unit area with the measurement unit being tesla (T) or gauss (G) (one tesla equals 10,000 gauss). Also see electric and magnetic fields.

mitigate

In environmental usage, to either reduce or avoid an adverse environmental effect through various measures that seeks to make the effect less severe, less obvious, or more acceptable.

National Electric Safety Code (NESC)

Written standards, providing basic requirements for the design, construction, maintenance, and operation of electric supply and communication lines, equipment, and supply stations in order to safeguard persons from hazards associated with those activities.

National Environmental Policy Act (NEPA)

A 1969 Federal law that requires evaluation of the environmental impact of Federally funded projects and programs. Generally requires an environmental assessment and/or an environmental impact statement be submitted to the Federal government before a project can begin.

National Marine Fisheries Service (NMFS)

An agency of the U.S. Department of Commerce that oversees ocean and river fish harvest limits and determines which stocks are to be listed as endangered or threatened under the *Endangered Species Act*.

National Pollutant Discharge Elimination System (NPDES)

A provision of the Clean Water Act that prohibits discharge of pollutants into Waters of the United States unless a special permit is issued by the EPA, a state, or (where delegated) a tribal government on an Indian reservation.

navigable waters

Defined by the Federal Water Pollution Control Act, Section 502, as navigable waters, interstate waters, interstate lakes, rivers, and streams that are used for recreation and commercial fishing.

network

1) A system of interconnected circuit components. 2) A system of transmission (or distribution) lines interconnected and operated so that any principal point has multiple sources of power supply.

new transmission

Actions within an alternative that would require construction of new transmission lines including acquisition of new rights of way, placement of new structures, construction of new access roads, and the related activities that accompany the operation of a power transmission line.

nitrogen dioxide (NO₂)

A reddish-brown gas that forms during high temperatures of combustion. Is toxic at high concentrations and reacts with moisture in the air to form nitric acid, which is highly corrosive to metals. Is a key ingredient in the formation of photochemical smog and acid rain.

nonattainment area

A geographic area that does not meet one or more national air quality standards.

outage

In a power system, a period—scheduled or unexpected—during which the transmission of power stops or a particular power-producing facility ceases to provide generation.

overload

Operation of equipment in excess of its normal, full load rating or operation of a conductor in excess of ampacity, and if continued for a sufficient length of time, would cause damage or overheating.

palustrine

Of, pertaining to, or living in, a marsh or swamp; marshy.

particulates

Airborne particles including dust, smoke, fumes, mist, spray, and aerosols. Also see pollutant.

pollutant

A contaminant, such as sulfur dioxide, nitrous oxide, hydrocarbons, radionuclides, carbon monoxide, and lead, present in a concentration high enough to cause adverse effects to health or the environment.

pollution

The accumulation of wastes or byproducts of human or natural activity that occurs when wastes or byproducts are discharged faster than they can degrade, assimilate, or disperse by natural processes.

power system

1) In general, a group of one or more generating resources and connecting transmission lines operated under common management or supervision to supply load. 2) An entire interconnected electric power transmission and distribution network together with connected generating plants and loads.

prevention of significant deterioration (PSD) increment

Upper limits criteria pollutant concentrations allowed in clean air sheds. Established by the Environmental Protection Agency to protect existing air quality from being degraded significantly through new developments, such as construction and operation of new air pollution sources.

prime farmland

Prime farmland meets all the criteria in the USDA publications: Soil Taxonomy, Agriculture Handbook 436; Soil Survey Manual, Agriculture Handbook 18; Rainfall-Erosion Losses from Cropland, Agriculture Handbook 282; Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss, Agriculture Handbook 346; and Saline and Alkali Soils, Agriculture Handbook 60.

radio interference (RI)

Impairment of the reception of a wanted radio signal by an unwanted radio signal or disturbance, usually expressed in microvolts. Usually the result of partial electrical discharges (corona).

reactive organic gas (ROG)

A photochemically reactive chemical gas, composed of non-methane hydrocarbons, that may contribute to the formation of smog.

realignment

Relocating an existing transmission line as part of an overall strategy to optimize the use of an existing right-of-way and allow for the possible use of the right-of-way for another transmission line.

reconductoring

The process of installing larger or better conductors in place of existing conductors on existing towers/structures. In some cases, reconductoring incorporates changes to the existing structures to provide the necessary structural capability to support larger conductors.

record of decision (ROD)

The document notifying the public of a decision taken by a Federal agency on a proposed action, together with the reasons for the choices entering into that decision.

reliability

1) The measure of the ability of a power system to provide uninterrupted service, even while that system is under stress. 2) In a relay or relay system, a measure of the degree of certainty of correct performance. Denotes certainty of correct operation together with assurance against incorrect operation from all extraneous causes.

residual impact

A significant impact that when mitigated still exceeds an established standard or threshold.

right-of-way (ROW)

An easement for a certain purpose over the land of another, such as the strip of land used for a road, electric transmission line, ditch, or pipeline. Western usually acquires easements for its transmission lines, roads, and other facilities such as guys and anchors. Road rights-of-way are usually acquired in 20- or 50-foot widths; for 230-kV transmission lines, the width of the ROW is usually 125 feet.

riparian

Habitat or areas, usually adjacent to rivers, streams, or lakes, where the vegetation and microclimate are heavily influenced by water.

rolling blackouts

A rolling blackout occurs when a power company turns off electricity to selected areas to save power. The areas are selected using sophisticated computer programs and models. The blackouts are typically for one hour, then the power is restored and another area is turned off. Hospitals, airport control towers, police stations, and fire departments are often exempt from these rolling blackouts. These blackouts usually occur during peak energy usage times, usually between 4:00 p.m. and 7:00 p.m. on weekdays, but they can happen at any time of day. Blackouts may affect the same area more than once a day, and may exceed an hour's duration.

route segments

Alphabetic designation (A through H) of route activities associated with the alternatives.

scoping

For an environmental impact statement, the process of defining the range of issues requiring examination in studying the environmental effects of a proposed action, generally including public consultation with interested individuals and groups, as well as with agencies with jurisdictions over parts of the project area or resources in that area.

shield wire

Used to provide protection to a conductor from lightening strikes. Also see ground wire.

State Implementation Plan (SIP)

State plans approved by the EPA for establishing, regulating, and enforcing air pollution standards.

structure

A broad-base latticed steel support for line conductors (as differentiated from a wood or steel pole structure or line).

sulfur dioxide (SO₂)

One of the gases composed of sulfur and oxygen produced by the combustion of fuels containing sulfur and a key ingredient in the formation of smog and acid rain.

surface water

1) All water naturally open to the atmosphere, such as rivers, lakes, reservoirs, streams, impoundments, seas, and estuaries. 2) Refers to all springs, wells, or other collectors, which are directly influenced by surface water.

terrestrial

Living or growing on land; not aquatic: a terrestrial plant or animal.

thermal rating

The temperature that can be withstood by an object without losing structural or functional integrity.

threatened species

As defined in the *Endangered Species Act*, those species likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

traditional cultural property

A property that is eligible for inclusion on the National Register of Historic Places because of its association with cultural practices or beliefs of a living community that are important in maintaining the continuing cultural identity of the Native American community.

transformer

A device for transferring electrical energy from one circuit to another by magnetic induction, usually between circuits of different voltages. Consists of a magnetic core on which there are two or more windings. In power systems, most frequently used for changing voltage levels.

transmission

The bulk transport of electricity from large generation centers over significant distances to interchanges with large industries and distribution networks of utilities.

transmission grid

An interconnected network of transmission lines including associated equipment for the transfer of electric energy in bulk between points of supply and points of demand.

transmission line

A high-voltage, extra-high-voltage, or ultra-high-voltage power line used to carry electric power efficiently over long distances.

undeformed

The opposite of deformed. The rocks masses have not been subject to structural forces or have been relaxed on geologic materials that have been previously stressed.

U.S. Army Corps of Engineers (USACE)

The builder and now the owner-operator of many of the Federal dams in the Columbia River Basin (as well as elsewhere in the U.S.).

U.S. Bureau of Land Management (BLM)

A Bureau within the DOI responsible for managing public lands, including resources such as timber, minerals, oil and gas, geothermal energy, wildlife habitat, endangered species, recreation and cultural values, and open space.

U.S. Bureau of Reclamation (Reclamation)

A Bureau within the DOI responsible for operating and maintaining dams and numerous water resource projects in the western U.S., for such purposes as irrigation and power production.

U.S. Department of Energy (DOE)

A Department established in 1977 by the *Department of Energy Organization Act* to consolidate the major Federal energy functions into one cabinet-level department that would formulate a comprehensive, balanced national energy policy. Responsible for regulatory, research, and marketing programs related to energy production and use.

U.S. Environmental Protection Agency (EPA)

The Federal agency created in 1970 to permit coordinated and effective governmental action for protecting the environment by the systematic abatement and control of pollution by integrating research, monitoring, standard setting, and enforcement activities.

U.S. Fish and Wildlife Service (USFWS)

An agency within the DOI responsible for guiding conservation, development, and management of U.S. fish and wildlife resources.

utility

A public or private organization created for the purpose of selling or supplying for general public use water, electric energy, telephone service, or other items or services.

vernal pool

Ephemeral pools that dry up periodically, typically holding water for only a few days to months. Vernal pools are of particular concern because human development has destroyed most of the pools, and yet there are many endemic animal and plant species found in these pools. Some of these species are even listed as threatened or endangered under the *Endangered Species Act*, and others have been identified as species of concern by state and federal officials. In addition, new species are being identified as surveys of remaining pools are completed.

volt (V)

The unit of electromotive force, or voltage, that if steadily applied to a circuit having a resistance of one ohm will produce a current of one ampere.

voltage

The driving force that causes a current to flow in an electric circuit. Voltage and volt are often used interchangeably.

voltage sag

A momentary decrease of more than 10 percent in voltage magnitude.

voltage support

Voltage support is provided by generators, transmission systems, and equipment within the system, designed to react during normal or contingency operating conditions and sudden changes in load and maintain the established power grid voltage requirements. If there are insufficient or ineffective voltage support devices in an area to support high transmission loading during normal or contingency operations, voltages in that area could cause voltage collapse resulting in blackouts.

waste minimization

The reduction in volume or quantity of hazardous waste by the entity responsible for generating the waste.

watershed

The land area that drains into a stream or lake.

Western

See Western Area Power Administration.

Western Area Power Administration (Western)

One of the DOE's four power marketing agencies. Headquartered in Lakewood, Colorado, its service area includes 15 central and western states.

wetlands

Areas that are inundated by surface water or groundwater often enough to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions, such as swamps, bogs, fens, marshes, and estuaries.